NOV 30 1992

GRIFFIN INTERNATIONAL INC

24 November 1992

Mr. Charles B. Schwer
Agency of Natural Resources
Department of Environmental Conservation
Hazardous Materials Division
103 South Main Street/West Building
Waterbury, Vermont 05671-0404

RE: Farrell Distributors, Corp. Montpelier, Vermont.
VTDEC Site #92-1257

Dear Mr. Schwer:

Please find enclosed Griffin's Report on the Investigation of Residual Subsurface Petroleum Contamination at the above referenced site. This work has been completed in response to your 17 July1992 letter to Mr. Roger Meilleur of Farrell Distributors, Corp. Farrell Distributors has received and reviewed a copy of this report.

If you have any questions, please call.

Cordially,

Christopher Hill
Hydrogeologist

Enclosure

2B Dorset Lane • Williston, VT 05495 • 802-879-7708

REPORT
ON THE INVESTIGATION OF RESIDUAL SUBSURFACE PETROLEUM CONTAMINATION

Prepared For:

Farrell Distributors, Corp.
Gallison Hill Road
Montpelier, Vermont 05602
(802) 223-3448

VTDEC SITE #92-1257
GRIFFIN PROJECT #9924285

NOVEMBER 1992

Prepared By:

GRIFFIN INTERNATIONAL, INC.
2B Dorset Lane
Williston, Vermont 05495
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TABLE OF CONTENTS

INTRODUCTION

This report details the investigation of residual subsurface petroleum contamination at the Farrell Distributors Corporation facility in Montpelier, Vermont. This work has been conducted by Griffin International, Inc. (Griffin) for the Farrell Distributors Corporation in response to the 17 July 1992 letter from the Vermont Department of Environmental Conservation (VTDEC) to Mr. Roger Meilleur of Farrell Distributors. In that letter, the VTDEC requested a complete Site Assessment in response to the discovery of residual subsurface petroleum contamination during the removal of a petroleum underground storage tank (UST) on 30 June 1992.

EXECUTIVE SUMMARY

During the removal of a petroleum UST at the subject site on 30 June 1992, residual petroleum contamination was detected in soil and groundwater surrounding the tank. A follow-up site assessment indicates that no free phase product (gasoline) is present in monitoring wells surrounding the former UST. However, residual petroleum contamination is present in the dissolved state in groundwater beneath the former UST location at levels above the Vermont Groundwater Enforcement Standards. No imminent hazard to the public health is apparent. No sensitive receptors appear at risk. One additional round of groundwater sampling has been recommended to document the reduction in dissolved phase contaminant concentrations over time.

SITE BACKGROUND

Site Description

The Farrell Distributors site is located on Gallison Hill Road in Montpelier, Vermont. Gallison Hill Road intersects with VT Route 2 two thousand feet southeast of its intersection with VT Route 302 (See Site Location Map, page A1, Appendix). The site is located at the northern edge of the Winooski River flood plain. The surficial geology of the site is mapped as lake bottom silts, silty clay, and clay. Observations made during excavation of the former UST confirmed the mapped surficial geology of the site, revealing silty brown sand (fill material) overlying a very dense basal layer of gray clay. The surrounding area (1,000 foot radius) consists of sparsely placed commercial buildings, railroad tracks and roadways. There are no residences in the immediate vicinity of the former UST location (See Site Map, page A2, Appendix). The commercial buildings surrounding the former UST location are all served by the Montpelier Municipal Water Supply System.

Site History

On 29 and 30 June 1992 a single, ten thousand gallon UST, used to store unleaded gasoline was removed from the subsurface at the Farrell Distributors location. All associated piping was also removed. The gas pump island used to deliver fuel from the former UST is still in place and is used to deliver fuel from the existing diesel USTs and the replacement unleaded UST. The tank removal was accomplished by Northland Petroleum Equipment Corp. of Barre, Vermont.

Inspection of the tank after removal indicated that it was in good condition, with no apparent punctures or holes. However, residual petroleum contamination was indicated by the presence of volatile organic compounds in soils surrounding the UST. A photoionization detector used during the removal of the tank indicated that contaminant concentrations were highest near the underground piping leading to the pump island.

Oversight services of the tank removal was provided by Griffin International. Additional details of the tank removal appears in Griffin's tank closure report dated 1 July 1992.

INVESTIGATIVE PROCEDURES

In an effort to determine the degree and extent of residual petroleum contamination at the site, Griffin collected groundwater samples from pre-existing monitoring wells at the site and completed an inspection of the area to identify sensitive receptors. Survey data for a site map, and other relevant data was also collected. Details and results of the work completed follow.

Existing Monitoring Wells

Three monitoring wells which were installed as part of a leak detection system for the former UST were left in place and were undamaged after the tank removal. These monitoring wells were inspected to determine whether they would be adequate for water sample collection. The inspection revealed that the wells were in good condition, with ample water in the screened section for collection of groundwater samples. The wells are constructed of two inch diameter PVC piping and are set flush with grade level. The wells are protected at the surface by steel well head protection casings and covers. The top of casing elevation of each monitoring well was surveyed relative to significant site features for inclusion on a site map.

Groundwater Sampling and Analyses

On 24 September 1992, Griffin collected groundwater samples from each of the three monitoring wells. All samples collected were analyzed according to EPA Method 602 which tests for the gasoline related compounds benzene, toluene, ethylbenzene, xylenes (the BTEX compounds) and MTBE (methyl tertiary butyl ether, an anti-knock gasoline additive). All samples were collected according to Griffin's groundwater sampling protocol.

The lab analyses of the groundwater samples from MW1 indicate the presence of both the BTEX and MTBE compounds in the dissolved state in groundwater surrounding this well. The concentrations of benzene, xylenes, and MTBE were above the Vermont Health Advisory Levels for these compounds in drinking water. Water quality results are tabulated on page A6 of the Appendix along with the Advisory Levels for the tested compounds. Supporting laboratory report forms are also included.

Lab analysis of the groundwater sample from MW2 indicates that none of the tested compounds were present in groundwater surrounding this well.

The lab results from the analysis of the groundwater sample from MW3 indicate the presence of only benzene and MTBE. The concentrations of both of these compounds in MW3 are above the Vermont Health Advisory Levels for these compounds in drinking water.

Duplicate, trip blank and equipment blank samples indicate that adequate quality assurance/quality control was maintained during sample collection and analyses. No free phase product was observed in any of the three monitoring wells.

Determination of Groundwater Flow Direction and Gradient

On 11 November 1992, Griffin collected water level measurements from MW1 through MW3. Measurements were made from the top of the well casing. These depth to water measurements were then subtracted from an arbitrary datum (top of casing of MW2) which was assigned an elevation of 100.00 feet. The resulting water table elevation data was plotted on the site map developed from the survey data, and used to determine the groundwater flow direction and gradient.

A Groundwater Contour Map appears on page A4 of the Appendix and is followed by supporting Liquid Level Data on page A5. Groundwater beneath the former UST location was encountered approximately 5.5 feet below grade and was determined to be flowing southwest, toward the Winooski River, at a gradient of approximately 1.5%.

Receptor Survey

On the same day that the water samples were collected, Griffin inspected the area surrounding the former UST pit for sensitive receptors that might be at risk from the presence of residual petroleum contamination in the soil and groundwater. During this inspection, no water supply wells were found. The absence of water supply wells on the property was confirmed by a representative of Farrell Distributors. The entire Farrell Distributors facility and surrounding businesses are served by the Montpelier Municipal Water supply system. In addition, the buildings immediately adjacent to and across from the former UST location do not have basements, which could serve as collection points for petroleum fumes. No surface waters or other environmentally sensitive receptors were identified in the immediate vicinity of the former UST location. The Winooski River is approximately 500 feet to the south.

RISK ASSESSMENT

Based on the absence of any water supply wells, basements, surface waters, or other sensitive receptors in the immediate vicinity of the former UST pit, it appears that there is little risk posed to the public health or the environment by the presence of this residual subsurface petroleum contamination. Given the observed contaminant concentrations, the absence of free phase product, and the 500 foot distance to the Winooski River, it appears unlikely that residual petroleum contamination will reach the River in detectable concentrations. The dense basal layer of clay observed beneath the former UST location should prevent vertical migration to the bedrock aquifer, thus protecting it from residual petroleum contamination. The low permeability

of the clay layer should prevent the horizontal migration of residual contamination beneath the clay horizon. Any migration which does occur will likely occur in the fill material above the basal clay.

The absence of free phase product in any of the monitoring wells surrounding the former UST pit indicates that the degree of contamination is limited. The absence of free phase product should allow the natural processes of dispersion, dilution, and biodegradation to significantly reduce contaminant concentrations over time.

CONCLUSIONS

Based on the information gathered during this limited site assessment, Griffin has reached the following conclusions:

- One ten thousand gallon gasoline UST was removed for permanent closure from the Farrell Distributors location on 30 June, 1992. A replacement tank was installed at another location on the property. Residual petroleum contamination was detected in the soils and groundwater surrounding the tank on the day of removal.

- During this site investigation, no free phase product was detected in any of the three monitoring wells surrounding the former UST location which have been in place for approximately three years.

- Groundwater samples collected from these monitoring wells indicate that dissolved phase petroleum contamination is present in only two of the wells, MW1 and MW3. Contaminant concentrations in these monitoring wells were above Vermont Health Advisory Levels for these compounds in drinking water. No petroleum related, dissolved phase, contamination was detected in the groundwater sample collected from MW2.

- Groundwater surrounding the former UST was measured to be approximately 5.5 feet below grade and flows to the southwest at a gradient of 1.5 %

- Visual inspection of the surrounding area revealed no sensitive receptors at risk from the presence of the residual petroleum contamination. All of the surrounding structures are reported to be served by the Montpelier Municipal Water Supply System. The Winooski River is not believed to be at risk from the residual petroleum contamination.

- There is no apparent, imminent threat to human health or to the environment from the presence of this residual petroleum contamination.

- The absence of free phase product should allow the natural processes of dispersion, dilution, and biodegradation to reduce contaminant concentrations more quickly than if free product was present. Contaminant concentrations should decline significantly over time.

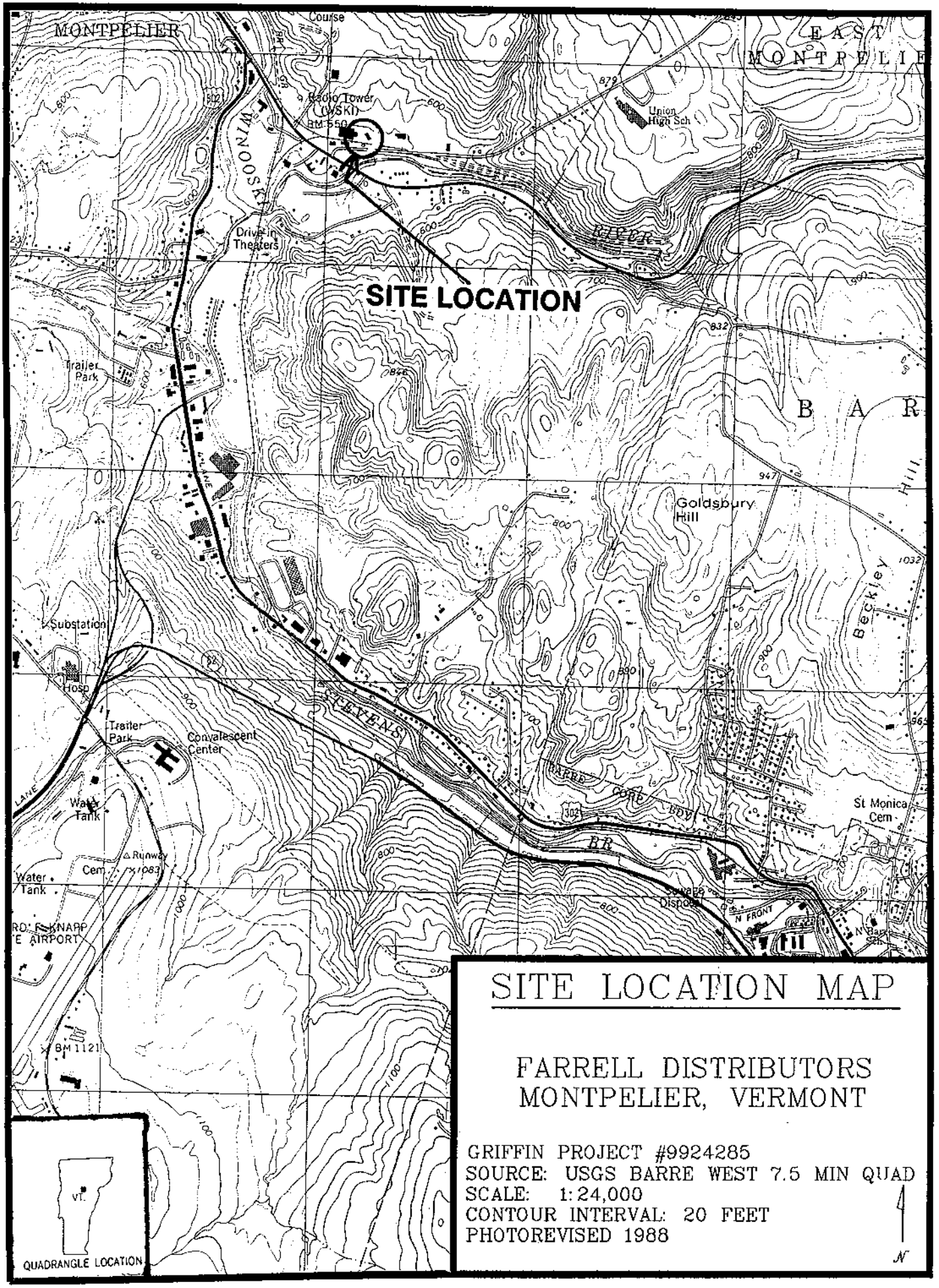
RECOMMENDATIONS

Based on the information collected during this site assessment, Griffin recommends the following actions:

- To document the reduction of contaminant concentrations in groundwater surrounding the former UST pit, one round of groundwater samples should be collected from the three existing monitoring wells in October of 1993. This will provide documentation of the expected improvement in groundwater quality.

- Based on the available data, it does not appear that active remediation or further investigation of this site is warranted at this time.

APPENDIX



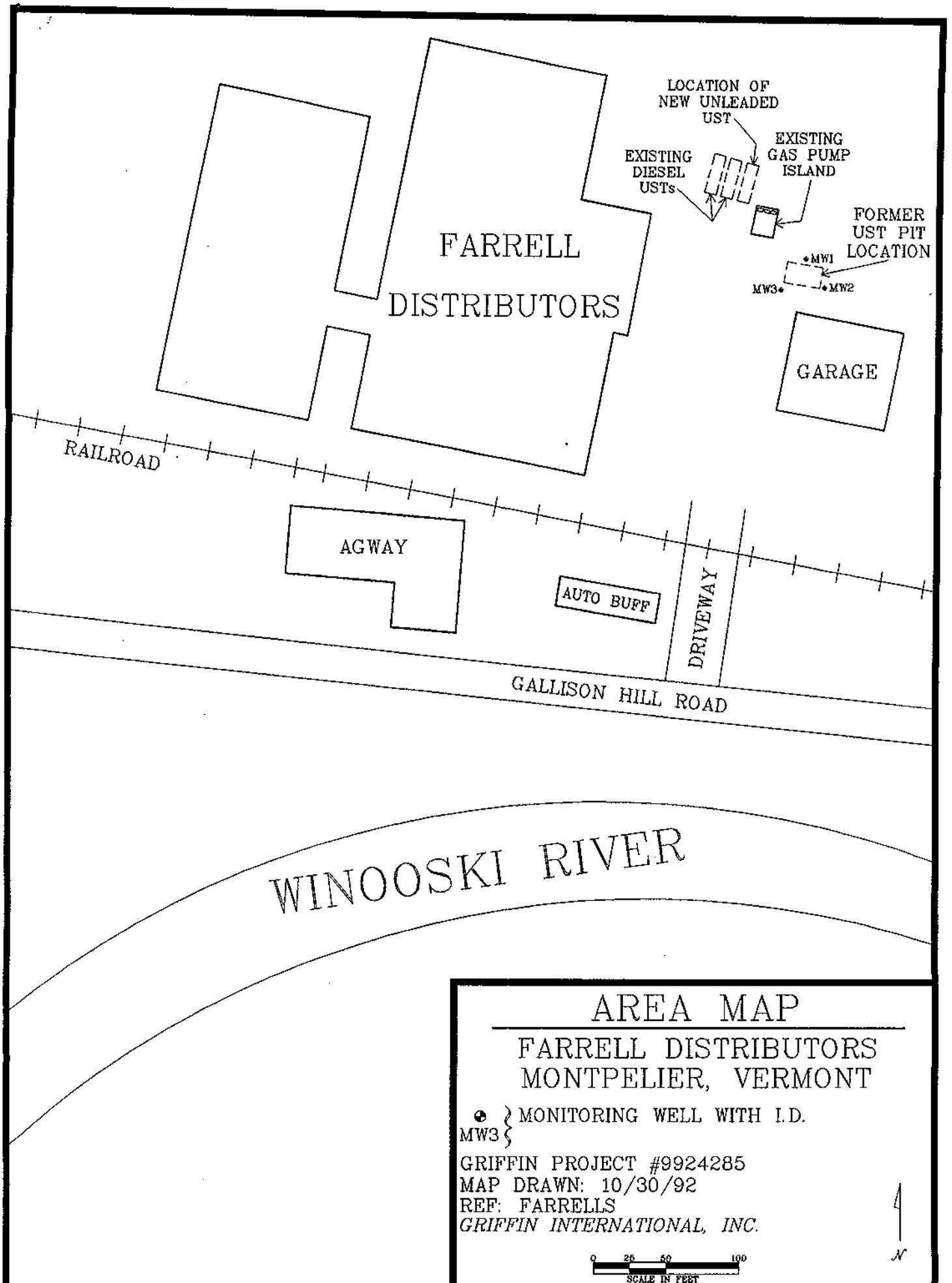
SITE LOCATION MAP

FARRELL DISTRIBUTORS
MONTPELIER, VERMONT

GRIFFIN PROJECT #9924285
SOURCE: USGS BARRE WEST 7.5 MIN QUAD
SCALE: 1:24,000
CONTOUR INTERVAL: 20 FEET
PHOTOREVISED 1988

N

A1



AREA MAP

FARRELL DISTRIBUTORS
MONTPELIER, VERMONT

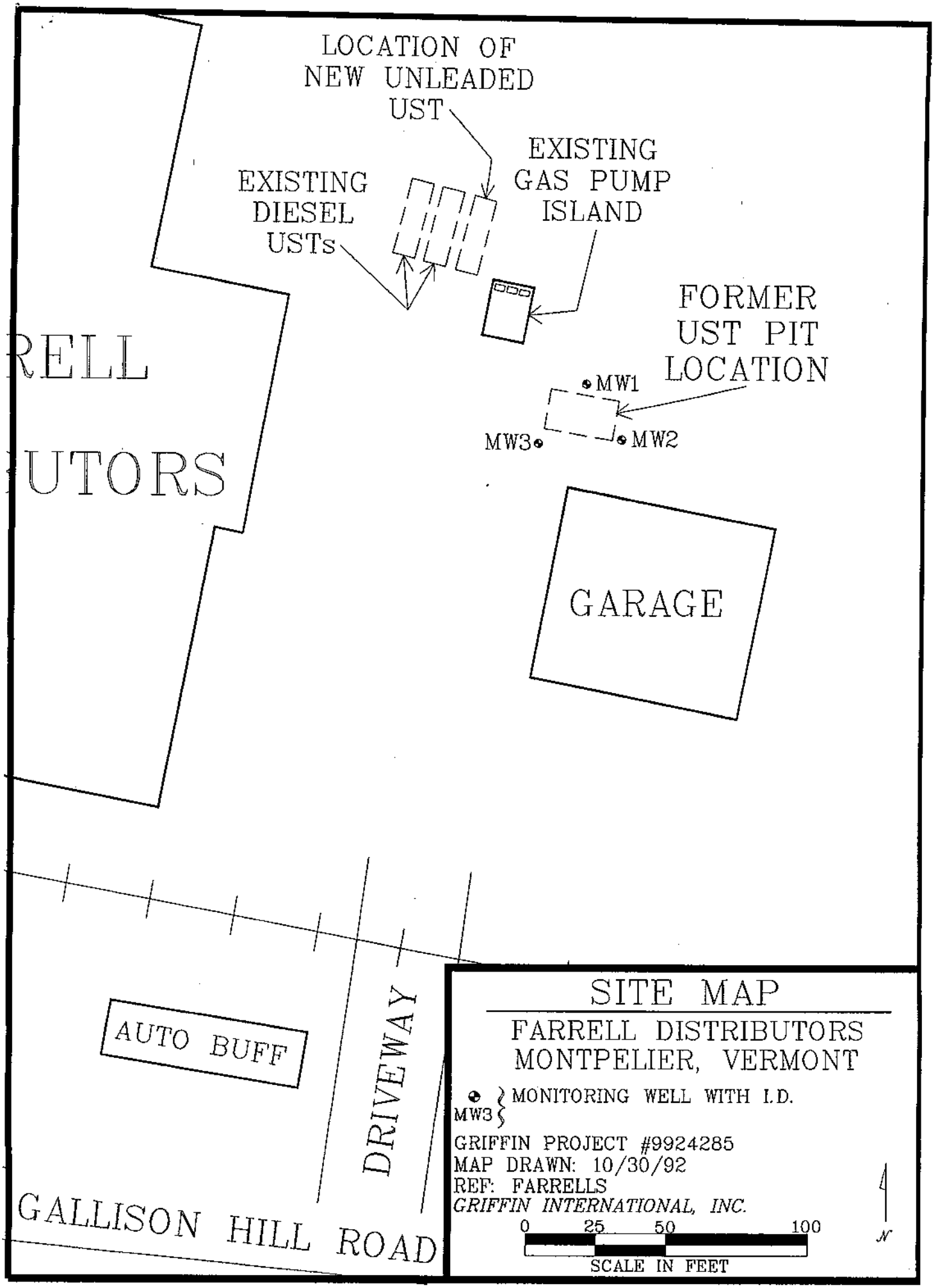
⊕ MW3 } MONITORING WELL WITH I.D.

GRIFFIN PROJECT #9924285
MAP DRAWN: 10/30/92
REF: FARRELLS
GRIFFIN INTERNATIONAL, INC.

N

0 25 50 100
SCALE IN FEET

A2



SITE MAP

FARRELL DISTRIBUTORS
MONTPELIER, VERMONT

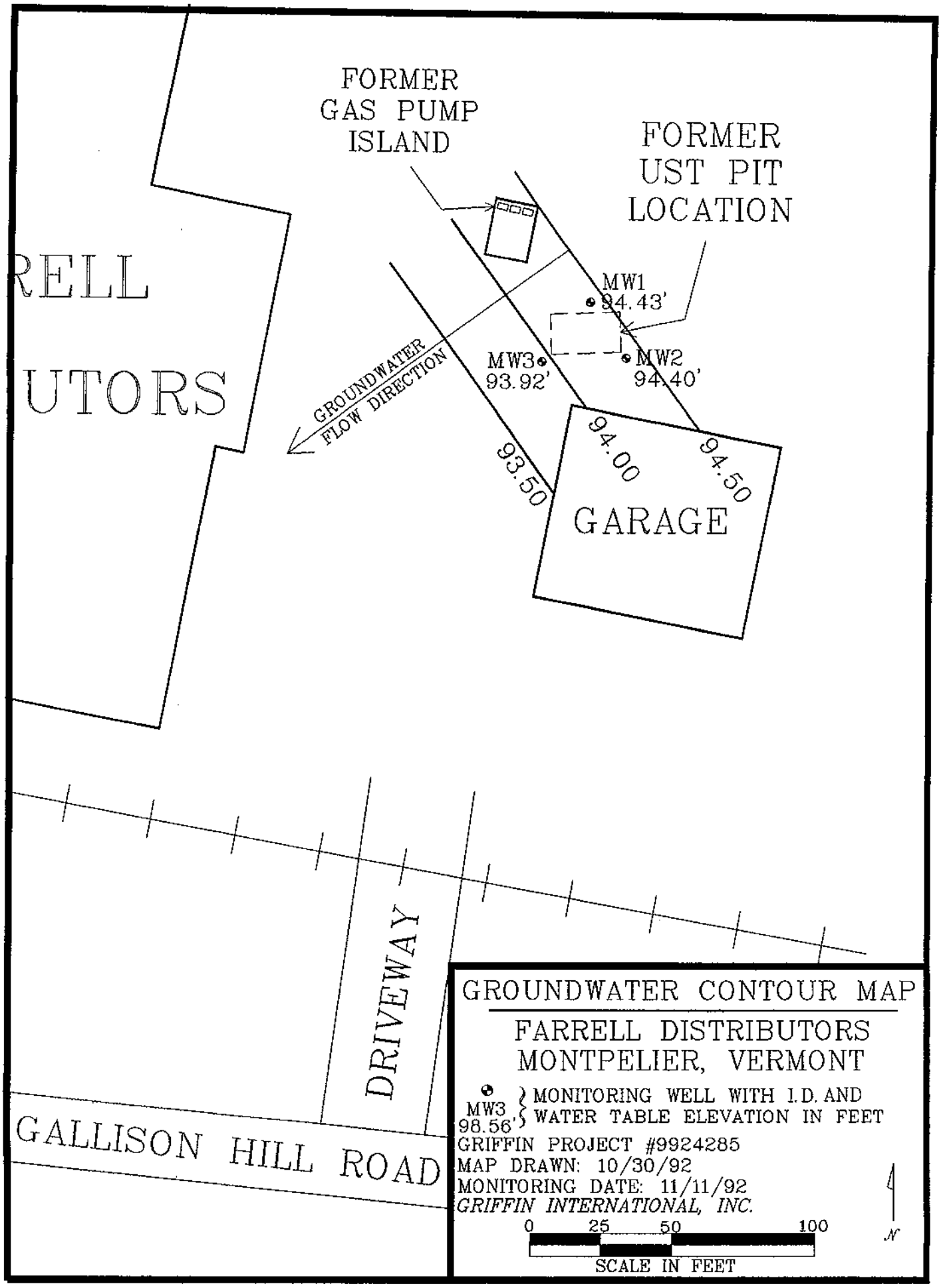
MW3 } MONITORING WELL WITH I.D.

GRIFFIN PROJECT #9924285
MAP DRAWN: 10/30/92
REF: FARRELLS
GRIFFIN INTERNATIONAL, INC.

0 25 50 100
SCALE IN FEET

N

A3


FORMER
GAS PUMP
ISLAND
FORMER
UST PIT
LOCATION
RELL
UTORS
MW1
94.43'
MW3
93.92'
MW2
94.40'
GROUNDWATER
FLOW DIRECTION
93.50
94.00
94.50
GARAGE
DRIVEWAY
GALLISON HILL ROAD
GROUNDWATER CONTOUR MAP
FARRELL DISTRIBUTORS
MONTPELIER, VERMONT
MW3
98.56'
MONITORING WELL WITH I.D. AND
WATER TABLE ELEVATION IN FEET
GRIFFIN PROJECT #9924285
MAP DRAWN: 10/30/92
MONITORING DATE: 11/11/92
GRIFFIN INTERNATIONAL, INC.
0
25
50
100
SCALE IN FEET
N

A4

Liquid Level Monitoring Data
Farrell Distributors
Montpelier, Vermont

Monitoring Date:
11-Nov-92

Well I.D.	Well Depth	Top of Casing Elevation	Depth To Product	Depth To Water	Product Thickness	Specific Gravity Of Product	Hydro Eqiuvalent	Corrected Depth To Water	Corrected Water Table Elevation
MW-1	-	**99.46**	-	**5.03**	-	-	-	-	**94.43**
MW-2	-	**100.00**	-	**5.60**	-	-	-	-	**94.40**
MW-3	-	**99.56**	-	**5.64**	-	-	-	-	**93.92**

All Values Reported in Feet

Groundwater Quality Summary
Farrell Distributors
Montpelier, Vermont

Sampling Date: 24 September 1992

PARAMETER	Location MW-1	MW-2	MW-3	Vermont Health Advisory Levels
Benzene	**1,180.**	ND	**8.1**	5.0*
Chlorobenzene	ND	ND	ND	100**
1,2-DCB	ND	ND	ND	-
1,3-DCB	ND	ND	ND	-
1,4-DCB	ND	ND	ND	-
Ethylbenzene	**383.**	ND	ND	680**
Toluene	**718.**	ND	ND	2,420**
Xylenes	**1,410.**	ND	ND	400**
Total BTEX	**3,691.**	ND	**8.1**	-
MTBE	**107.**	ND	**2,140.**	40**
BTEX+MTBE	**3,798.**	ND	**2,148.**	-

All Values Reported in ug/L (ppb)

* - Maximum Contaminant Level ND - None Detected

** - Health Advisory Level